2008 Monitoring Plan
Spartina Eradication Program

Aerial application in Willapa Bay during the 2007 treatment season.

February 2008

Washington State Department of Agriculture

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2008 Washington State *Spartina* Control Monitoring Plan For Aquatic Noxious Weed Control National Pollutant Discharge Elimination System Permit

Submitted by Washington State Department of Agriculture

Background

The Washington State Department of Agriculture (WSDA) has been issued a National Pollution Discharge Elimination System (NPDES) permit for the control of aquatic noxious weeds (WAG-993000), which covers *Spartina* control activities. This monitoring plan addresses the control of *Spartina* using the herbicides glyphosate and imazapyr. The compliance schedule contained in the NPDES permit requires monitoring (section S6).

Monitoring Plan Objectives

- Determine the amount of imazapyr and glyphosate residue in the sediments at a *Spartina* control site with multiple years (2006 and 2007) of aerial application of herbicide and treatments in 2008.

- Determine the amount of imazapyr and glyphosate residue in the sediments at a *Spartina* control site with one year of aerial application of herbicide in 2007 and treatments in 2008.

- Determine the amount of imazapyr and glyphosate residue in the sediments at a *Spartina* control site with multiple years (2006 and 2007) of ground application of herbicide and treatments in 2008.

- Determine the amount of imazapyr and glyphosate residue in the sediments at a site that has not been treated for *Spartina* utilizing herbicide since 2006.

Design

Selection of the study sites was based upon the objectives of this monitoring plan, the requirements of the NPDES permit (WAG-993000), and locations of prior herbicide applications. All sediment sampling will occur after herbicide applications for the 2008 control season have ceased. This plan will fulfill the requirement for monitoring under the NPDES permit.

Sediment Sample Sites

Time and dates of sampling events will occur at least 12 hours after all treatments of herbicide in Willapa Bay have ceased in 2008. Time and dates of actual sampling events are contingent upon tide and weather conditions.

Imazapyr and glyphosate residue samples from the multiple aerial treatment location will be taken from the Kindred Island area in Willapa Bay. Herbicide residue samples from the single

aerial treatment site will be taken from the Tower Slough area in Willapa Bay. The central Long Beach Peninsula will have two sampling locations; one location for herbicide residues at a site previously treated by ground applications and one sampling station at a location that has not been treated with herbicide since 2006. Table 1 summarizes the sample locations and recent treatment history. At each sampling location, ten sites will be sub-sampled and consolidated into a homogenized sample to represent each location. These sub-samples will be collected from within the sampling area. All sub-samples will be collected from within the previously treated areas. Figure 1 shows the approximate sampling areas for 2008 sediment monitoring in Willapa Bay.

To ensure personnel safety, all samples will be collected during daylight hours. In addition, WSDA reserves the right to change sampling locations and application methods, depending on management or unforeseen circumstances. Written notice will be made to the Department of Ecology (DOE) prior to a change in location.

Table 1: Sediment sample locations, number of sub-samples and recent herbicide treatment history.

Sediment Sample Date	Sample Area	Number of Sub-samples	Application Type	Infestation Type
After 9/30/08	Kindred Island, Pacific County	10	Multiple aerial applications and 2008 treatment	*Spartina alterniflora*
After 9/30/08	Tower Slough, Pacific County	10	Single aerial application and 2008 treatment	*Spartina alterniflora*
After 9/30/08	Long Beach Peninsula, Pacific County	10	Ground based application and 2008 treatment	*Spartina alterniflora*
After 9/30/08	Long Beach Peninsula, Pacific County	10	Herbicide application 2006 - Mechanical control 2007 and 2008	*Spartina alterniflora*

Activity Schedule

Key activities in the project (e.g., the sample process, sample delivery, sample analysis, results interpretation, and preparation of reports) will occur according to an activity schedule to be developed by the Sediment Monitoring Coordinator. Reporting for the 2007 - 2010 *Spartina* control programs will be completed by February 1 of each year, to meet NPDES requirements for annual reporting.

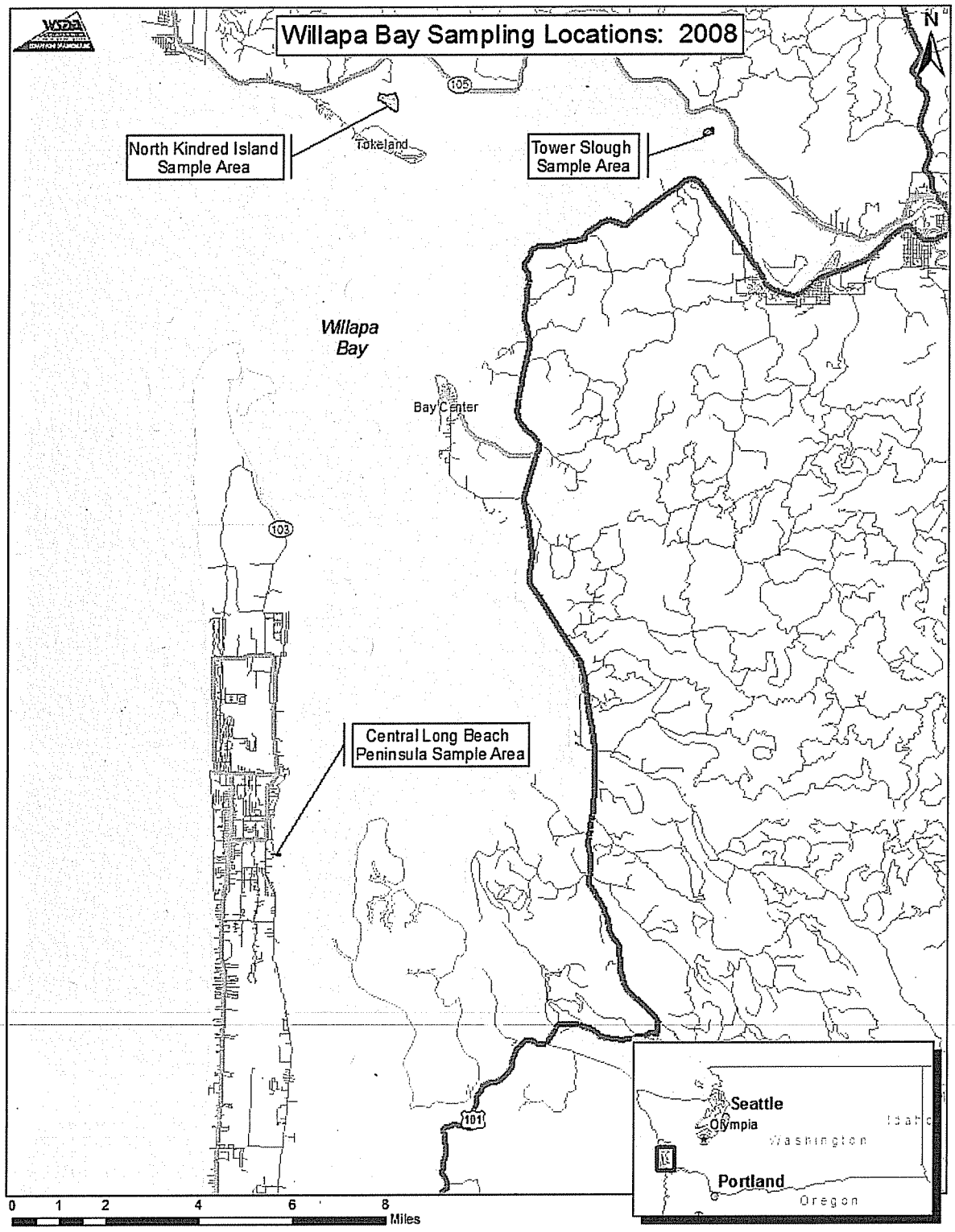


Figure 1: 2008 Willapa Bay Sediment Sampling Areas.

Project Organization

The following agencies will be involved in this project:
Washington State Department of Agriculture
Washington State Department of Fish and Wildlife
Washington State Department of Natural Resources
Washington State Department of Ecology
U.S. Fish and Wildlife Service

Data Quality and Analytical Procedures

Data quality will be ensured using written sampling procedures and checklists. The Sediment Sampling Coordinator will be responsible to ensure field notebook, checklist, data sets, etc. are completed as required at key points during each sampling activity. The Sampling Coordinator will assure all chain of custody and other security and quality control requirements and procedures are followed. Samples will be immediately sent to the processing lab, if this is not possible, samples will be stored in a refrigerator until they can be sent. All interfaces with transported and stored samples will be recorded so as to adhere to chain of custody protocol. The method used to quantify glyphosate will be EPA method number 547. Imazapyr samples will be processed using an HPLC method. A lab accredited by the Washington State Department of Ecology will process the samples.

Sampling Protocol

Where possible sampling methods for sediment will be consistent with (1) Puget Sound Estuary Program protocols (EPA 1996); (2) Methods for Collection, Storage and Manipulation of Sediments for Chemical and Toxicological Analyses: Technical Manual (EPA 2001); and (3) guidance for meeting requirements of the Ecology Sediment Management Standards (DOE 2003). The sampling methods described in this section were adapted from the Quality Assurance Plan—Wenatchee and Mid-Columbia Basins: Impact of Copper Use on Receiving Waters (DOE 2007).

Sediment samples will be collected with a 0.02 square meter stainless steel petite ponar grab sampler or other appropriate sampling equipment. The sample will be collected by hand at each designated site. Samples will be collected when the tide is out and the area is free of water. Samplers will take precautions to avoid disturbing the sediment surface to ensure sample quality. Samplers will wear non-talc, disposable nitrile gloves while manipulating any sediment samples.

At each sediment sample area, a sample will consist of ten individual grabs. Each sub-sample's location will be recorded with GPS coordinates. The top 10-centimeters (cm) of sediment will be retained at each location to reflect recently deposited material. A sample will be considered acceptable if it is not overfilled with sediment, the sediment surface is relatively flat, and the desired depth penetration has been achieved. A sample containing excessive root, stubble or other biomass which would negatively affect its ability to be processed will be repeated at a nearby location.

Upon retrieving a successful sample, the top 10-cm layer of sediment will be removed with a stainless steel spoon. Any sediment in contact with the sampling device will not be used. Sediment will be spooned into a stainless steel bowl and be stirred until uniform. A sub-sample

will be removed from the homogenate and placed in a sample container. All sample containers will be labeled with unique sample identification numbers and placed in polyethylene bags. Any glass sampling containers will be protected from breakage by wrapping each in bubble wrap or similar material. Sample containers will be kept in an iced cooler or refrigerator until transport to the laboratory. Chain-of-custody documents will be maintained.

Quality Control Procedures

The WSDA will provide or secure an experienced boat operator for each sample event requiring on-the-water transport. The operator will ensure specified collection sites are located in a safe and reliable manner. Once on site, the boat operator may act as part of the collection team as the "dirty hands" handler of samples. An alternate team member will act as the lead and be the "clean hands" handler during the collection, transport, and monitoring of all samples. The "clean hands" handler will complete pre-sampling event checklist(s) created to ensure all equipment is present; and clean, and all personnel, boat, and equipment are free of contamination.

Data Handling Protocols

Field data (e.g., time of sample, anomalies) will be recorded into a field notebook, copied after each field day, and stored at two different locations. Laboratory results will be copied upon receipt and stored at two different locations. Results will be entered into spreadsheets and analyzed using a standard statistical package.

References

Ecology, 2003, Sediment Sampling and Analysis Plan Appendix: Guidance on the Development of Sediment Sampling and Analysis Plans Meeting the Requirements of the Sediment Management Standards (Chapter 173-204 WAC). Washington State Department of Ecology, Olympia, WA. Publication No. 03-09-043, www.ecy.wa.gov/pubs/0309043.pdf.

Ecology, 2007, Quality Assurance Project Plan—Wenatchee and Mid-Columbia Basins: Impact of Copper Use on Receiving Waters, Washington State Department of Ecology, Olympia, WA, Publication No. 07-03-112, www.ecy.wa.gov/pubs/0703112.pdf.

EPA, 1996, Puget Sound Estuary Program (PSEP): Recommended Protocols for Measuring Selected Environmental Variables in Puget Sound. U.S. Environmental Protection Agency, Region 10, Office of Puget Sound, Seattle, WA.

EPA, 2001, Methods for Collection, Storage and Manipulation of Sediments for Chemical and Toxicological Analyses: Technical Manual. U.S. Environmental Protection Agency, Office of Water, Washington, DC. EPA 823-B-01-002.

2008 Spartina Program Sampling Checklist

Clean Hands Team Member:_____

Boat Operator/Dirty Hands Team Member: _____

Date of Sampling: _____ Area(s) Sampled: _____
Time of Departure: _____ Time of Return: _____

Sample ID#: _____

Assure each person participating in this sampling event is directly questioned on each item.

_____1) Have any of the monitoring participants been in the proximity of any imazapyr, glyphosate or other pesticide within the past two weeks?

_____2) Has each monitoring participant cleaned themselves and their clothing since last in contact with any imazapyr, glyphosate or other pesticide, or shortly before this sampling event (e.g., showered/bathed, hats, belts, shoes, boots, gloves, glasses, rain gear, etc.)? If no, do not continue until this cleaning is complete.

_____3) Has the transport vehicle/vessel been in the proximity of imazapyr, glyphosate or any other pesticide (e.g., in water where treatment occurred, near pesticide storage area, in proximity where mixing occurred)? If yes, do not continue until the answer to item 4 is "YES".

_____4) Has all transport equipment been thoroughly cleaned of any pesticide residue per relevant pesticide label directions? If no, do not continue until this cleaning is complete.

_____5) Has any of the other equipment to be used in this monitoring event been used in previous monitoring events? If yes, do not continue until the answer to question 6 is "YES".

_____6) Has all reusable equipment been cleaned, and is other equipment free of any potential contamination?

_____7) The purpose of this checklist is to assure there are no pesticide residue present on people, boats, equipment, or other that could possibly contaminate samples taken. With this in mind, are there any other potential contaminating sources that need to be addressed? If "YES", do not proceed until these sources are cleaned or addressed as appropriate.

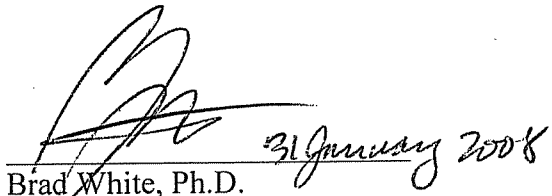
Clean Hands Team Member Signature:_____

Date:_____

Attachment A

Signatory Page

I certify under penalty of law, that this document and all attachments were prepared under my direction, or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiries of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.



31 January 2008

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